

# Farming practices under centre pivot and lateral move machines

By David Wigginton, NSW DPI and Joseph Foley, NCEA

The ability to place small amounts of water at precise locations is one of the major advantages of Centre Pivot and Lateral Move (CP&LM) machines. But given the wide array of soil types, sprinkler packages and crop requirements, what are the most appropriate methods of ensuring this water stays where you want it? This case study looks at the methods employed by four different growers in different situations.

## Carl and Steve Morawitz, Central Queensland

Carl and Steve have a total of five centre pivots on the cracking clay soils of their Comet property, with their most recently purchased machines irrigating 92 hectares (235 acres) with a system capacity of around 13 mm/day. These centre pivot fields are farmed in circles and cotton germination is currently achieved with three sprinkler applications (Nelson D3000

static plate sprinklers with 10 psi regulators) before switching to a LEPA system for the remainder of the season.

Interestingly, Carl had previously trialed the use of LEPA socks but decided that simply running flex hose (as used for the droppers from span pipe to regulator) gave adequate performance. Water is placed in every row for the outer three spans, where average application rate is the highest, and in every second row for the rest of the machine.

The cotton crop is planted on the flat into a heavy wheat straw mulch to improve infiltration and water retention, when cotton follows on from a wheat rotation crop. They currently rely on this retained stubble and soil cracks to hold water where it is placed when using LEPA during the main crop season.

Carl and Steve have previously used a ...49▷



Most growers use a LEPA system.

## WILL QUALITY AFFECT YOUR BOTTOM LINE?

## ...WE'LL TELL YOU

When you need the facts, we'll give them to you, without bias and on time. And with the bar being lifted even higher this year as the base grade increases, it is going to be even more important to have a professional classer working for you.

With the biggest classing team in Australia and 9 High Volume Instruments we not only deliver precise timely results, but it also allows us to cross check... for even greater accuracy.

You are even welcome to join us as we test your crop so you can see why we achieve results that are independent and accurate.

Contact us today – Phone: 02 6790 3052  
Mob: 0409 119 520 Email: [pbunce@ausclass.com.au](mailto:pbunce@ausclass.com.au)



AUSTRALIAN CLASSING SERVICES

AUC06110/ASF Group

ACCURATE RESULTS WHEN YOU NEED THEM



**Emitters in bubbler mode.**



**Myths about the proportion of water lost in flight.**

#### <47...FARMING PRACTICES

crocodile cultivator (or “paddle popper”) to place divots across the field to catch sprinkler applied water when planting cotton onto freshly cultivated bare fields. They felt that the divots were useful until mid-season but had often washed down by the later stages of the crop.

#### **Craig Saunders, St George**

Craig has been operating a centre pivot machine for the past six years, irrigating 89 hectares (220 acres) with a system capacity of 10.1 mm/day. The machine is located on Craig’s marginal country, irrigating red hard setting soils.

The machine is a LEPA setup with droppers every one metre on the outer three spans and every two metres on all inner spans. Instead of LEPA socks, the machine uses Senninger Quadspray emitters which are able to emit water in various modes. The emitters can operate in sprinkler mode for germination before a simple twist allows them to operate in LEPA bubbler mode for the rest of the season.

To maximise infiltration on his soils, Craig farms in circles under the pivot using one metre beds and furrow dykes. Initially, very high hills and beds resulted in poor irrigation performance because the sides of the beds induced runoff from both rainfall and germination sprinklers. The current system employs very small beds with flat tops along with stubble retention.

With the LEPA bubblers operating approximately two feet from the ground, the dykes tend to wash down after seven or eight irrigations, resulting in the need to build the dykes a second time to prevent water movement towards the end of the season. This problem could be prevented with double ended LEPA socks, but their short life span was not favoured by Craig.

#### **Will Stanford, Lachlan Farming, Hillston**

Lachlan farming operates three large lateral move machines with system capacities ranging from 12.8 to 13.6 mm/day on the red clay and grey loams of the Lachlan Valley. LEPA is not used on these machines as Will and the team believe that the very high average application rate produced by LEPA emitters will cause an issue with runoff from their soils. The machines are mostly fitted with Nelson yellow plate spinners and 15 psi regulators at two metre spacings and 1.4 metre heights.

Even using these long throwing sprinklers, which produce an excellent distribution of small droplets, runoff was initially being induced. The use of an Ellis Equipment dammer dike has allowed the sprinkled water to remain where it is placed. The dyking process is performed at the early two leaf stage and again before Christmas as the dykes tend to degrade over time.

The management team had considered the option of raising sprinklers to lower the average application rate, but after close consultation with the sprinkler manufacturer, were advised that optimal operation height was around 1.4 metres. Incorrect



**Low beds and no-till farming are common.**

myths abound in the industry about the proportion of water that might be lost from water droplets in flight.

The management team at Lachlan Farming understood that the high performance sprinkler already used on this farm produces a droplet spectrum that does not induce droplet evaporation, and that concerns with runoff issues were best controlled with their current dyking process.

To further improve infiltration, a winter wheat crop is grown to provide a standing stubble into which cotton is sown on lower and flatter two metre beds, a practice becoming more common as their general farming system moves towards 15 inch plantings.

#### **Tim Richards, Auscott Midkin, Moree**

Initially the Auscott group was strongly committed to ensuring that machinery and farming operations under CP&LM machines were not modified from those used on furrow irrigated fields. But farming operations have continued to evolve under the lateral move machines operated at Auscott Midkin leading to a number of changes in their farming system.

For example the lateral move fields irrigated today do not have the large hills normally associated with their furrow irrigated fields. High proportions of the field surface area were covered by the steeply sloping soils on the sides of these hills.

This sloping soil surface was only contributing to the poor penetration of sprinkler water into hills during germination irrigations. Low beds and no-till style farming are now in favour and some fields are being grown “on-the-flat” in broad-acre style. Stubble is also being retained from wheat crops grown with minimal water to provide a better environment for the establishment of the following cotton crop. 🌱